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SEISMIC OPERATIONS

AND FARMERS' RIGHTS

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Seismic Operations & Farmers' Rights

Preface

This publication is intended to provide the surface owner or occupant with a brief synopsis of their rights regarding seismic operators wishing to conduct seismic operations on private and leased land.

The information is a general guide and may not cover every situation that may be encountered. For specific clarification, the reader should refer or consult the appropriate agency listed on the last page.

Copies of this publication may be obtained from:

Information Packaging Centre
Alberta Agriculture, Food and Rural Development
7000 - 113 Street
Edmonton, Alberta

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Seismic Operations and Landowners' Rights

Farmers have specific rights with regard to seismic operations. The Farmers' Advocate has prepared this publication to provide information in response to questions about seismic activity.

It's important to note that a seismic operator may enter onto property only after obtaining approval from the owner and/or occupant. No other agency (government or legal) has the authority to grant access for seismic operations. Therefore, it's entirely up to the farmer to negotiate the specific terms of the contract to ensure that his/her interests are protected.

Chronology of a Seismic Survey

- The landowner and/or occupant is approached by a seismic company or its agent with the intention of negotiating a permit.
- The proposed seismic lines are positioned across the properties using laths or other approved, biodegradable material as markers. Note: The use of wire pin flags is no longer permitted unless written consent is provided. Access routes are established. Gates are designated for use and/or fences are cut. The seismic company is responsible for the repair of the fences, but may contract with the occupant for their repair.
- Seismic lines are cleared of brush or snow using a method authorized by the landowner.
- Markers (e.g., flags) are measured out and placed along the length of each seismic line. Each marker is surveyed to determine its horizontal and vertical position. This surveying procedure is referred to as chaining.
- If the project uses dynamite as an energy source, drilling is conducted at each designated source marker. A dynamite charge, with a length of cap wire attached, is loaded down each hole. As much drill cuttings as possible are put down the hole. A regulation hole plug is inserted to the regulated depth and the additional drill cuttings are tamped into the hole and spread on the surface.
- The seismic crew then lays out cable and plants geophones on the surface according to the markers placed by the survey crew.
- The recording of the seismic line is conducted by detonating each shot hole in sequence (dynamite survey) or by positioning source equipment (vibrators) on the seismic line and applying that type of surface energy in sequence. The energy waves, reflected back by the subsurface formations, are picked up by the geophones and relayed to the recording truck.
- After recording, the seismic line crew picks up the cable, geophones, markers, laths and refuse left by their operations. The cap wire is cut at ground level.
- Any shot holes that blow out must be re-plugged.
- An agent returns to pay any outstanding fees and compensation for damage, according to the terms of the permit(s). The agent also aquires a release from the owner and/or occupant. Damage can include crop loss, hay damage, rutting, fence repairs. Damage that becomes evident after the signing of a release (e.g., after winter operations) remains the responsibility of the company.

Seismic Tests on Titled Land

Seismic activity isn't governed under the *Surface Rights Act*. A seismic operator can't gain access unless consent is voluntarily given by the owner and the occupant. The specific rights of the owner and the occupant are protected under the Exploration Regulation. It states that no person shall conduct exploration on private land except with the consent of the person having lawful possession of the land, or that person's agent.

It's important to note that an occupant who rents land on a crop share or cash rent basis, though in lawful possession, may not give permission to the seismic company to cut trees or commit waste (waste is the abuse or destructive use of property).[1] The renter's agreement is to farm the land only, not remove trees or allow their removal. In addition, the potential for drill holes to create a problem that lasts beyond the term of the tenancy creates a need for the landlord to consent to seismic activity. Therefore, both the landowner and the renter should consent to seismic testing on the land. If entry is refused, the operator has no appeal.

Seismic Tests on Leased Land

The Exploration Regulation also indicates that on Crown leased land, consent of the lessee is necessary for approval of a seismic program.[2] The lessee may negotiate freely with the company concerning compensation for consent. If the lessee refuses to allow a seismic operator to enter upon his land, the operator has no appeal.

Seismic Tests on Leased Road Allowance

If the lessee and the seismic operator are unable to reach a negotiated agreement, a seismic operator can conduct testing on a leased road allowance 48 hours after giving written notice to the lessee.[3]

Once the seismic operator has entered the leased road allowance, repairs must be made to any fence broken or altered as a result of the seismic activity. The operator must also take all necessary measures to prevent the straying of and injury to livestock. The seismic operator must pay for any damages arising from the exploration operations.

Who is Testing?

Should an owner/occupant wish to find out who is conducting seismic operations in the area, an up-to-date record is kept by Alberta Environment's Forest Management Division. It is located in Edmonton and can be contacted at (780) 427-3932.

Exploration license holders (an oil company or seismic operator) are required to submit a preliminary seismic plan to the Disposition Services Branch/Land Administration Division at Alberta Environment, when requesting approval for their proposed activity.

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[1] Alta. Reg. 32/90,s. 3(2) and 3(3).
[2] Alta. Reg. 32/90, s. 3(1)(d).
[3] Alta. Reg. 32/90, s. 4(5).

Seismic Operations and Water Wells

A number of enquiries are made to the Office of the Farmers' Advocate about the effect of seismic operations on water wells. Shot holes should be drilled at a sufficient distance from water wells to minimize the possibility of the wells or water being affected or damaged. (See *Location of Shot Holes*).

If water well damage is a prime concern, the owner/occupant can exercise their right to refuse entry until adequate guarantees are given about productivity of the water well.

If there are concerns about the possibility of well failure or water quality deterioration when seismic activity is proposed over your land, the landowner and permit person can:

(1) Document information about the well (age, depth, completion, driller, yield, etc.)

(2) Perform a static level test (measure from top of casing at ground level down to the height of the water)

(3) Negotiate a more in-depth well study (e.g., pump tests) at the operator's expense, prior to the signing of any permit forms

When a landowner believes that seismic activity has disrupted his well, the following course of action is recommended.

(1) Attempt to contact the seismic company doing the work. If direct contact can't be made, the local municipal government may be able to supply the crew's location.

(2) Contact Alberta Environment's Forest Management Division at (780) 427-3932. Upon a complainant's request, the department will conduct a thorough and impartial investigation and attempt to determine the cause of the existing water well problem.

(3) Should these avenues not resolve the matter to your satisfaction, you may contact the Office of the Farmers' Advocate regarding the Water Well Restoration or Replacement Program. The program may provide compensation to an applicant whose well may have been affected by either seismic activity or the drilling of oil and gas wells. To be eligible for the program, the well must be repaired or replaced, and receipts must be attached to the application form.

For more information about this program or to obtain application forms, contact the Office of the Farmers' Advocate at (780) 427-2433.

Property Damage

If damages occur as the result of seismic activity, the seismic operator shall take immediate steps to rectify the problem and prevent additional damage. If a shot hole caves in, creating a cratered hole or releasing water, the operator is responsible for present and future claims. It should be noted that flowing shot holes can't be completed as a water well. They must be plugged.[4]

[4] Alta. Reg. 32/90, s. 34.

If the seismic operator or oil company causes above normal wear and tear (damage) to the land or damages improvements such as fences, culverts, gates, etc., compensation should be negotiated before a release is signed. In the event a settlement can't be reached, Alberta Environment's Forest Management Division should be contacted at (780) 427-3932.

An inspector will conduct an investigation to determine how the issue can be resolved. The recommendations of the department aren't binding on either party.

The Farmers' Advocate may also be contacted concerning a damage claim. Should the landowner anticipate problems with settling a damage claim after the geophysical operation has taken place, he has the right to include an arbitration clause in the geophysical permit. This should be added in the section marked "additional remarks" on the permit form. This should be done at the time of signing. Should you have any questions on this procedure, contact the Office of the Farmers' Advocate.

Location of Shot Holes

The following chart indicates the distances that must be maintained by dynamite and non-dynamite geophysical operations from various installations.

Note: The distance provisions of this section may be amended by the owner/occupant providing written consent is given to the operator. However, the minimum distance is 64 metres for dynamite operations and 50 metres for non-explosive (vibroseis) operations (See Schedule 2).

Required Distances For Various Seismic Operations

Structure	Non-Explosive	Explosive	Test Hole
	metres		
Residence, barn, cemetry, a building or structure with a concrete base	50	180	100
Water well	100 (vibroseis) 50 (other)	180	180
Buried waterline	5	10	10
Irrigation head works	50	180	100
Low pressure distribution pipeline (gas line)	3	3	3

Schedule 2[5]

Structure	Explosive	Test Hole	Non-Explosive Distance (m)	Test Hole Distance (m)
A. Residence, barn, cemetery, a building or structure with a concrete base, irrigation head works, dam, water well.	**Charge Weight (kg)**	**Distance (m)**	50	64
	2 or less	64		
	Greater than 2, not greater than 4	90		
	Greater than 4, not greater than 6	110		
	Greater than 6, not greater than 8	128		
	Greater than 8, not greater than 10	142		
	Greater than 10, not greater than 12	156		
	Greater than 12, not greater than 20	200		
	Greater than 20, not greater than 40	284		
	Greater than 40, not greater than 100	450		

[5] Alta. Reg. 32/90, Section 31 amended by OC 534/97.

Schedule 2 (cont'd)

Structure	Explosive	Test Hole	Non-Explosive Distance (m)	Test Hole Distance (m)
B. High pressure pipeline, oil or gas well	**Charge Weight (kg)**	**Distance (m)**	15	32
	2 or less	32		
	Greater than 2, not greater than 4	45		
	Greater than 4, not greater than 6	55		
	Greater than 6, not greater than 8	64		
	Greater than 8, not greater than 10	70		
	Greater than 10, not greater than 12	78		
	Greater than 12, not greater than 20	100		
	Greater than 20 not greater than 40	142		
	Greater than 40, not greater than 100	225		
C. Driveway, gateway, survey monument, buried telephone or tele-communications line	All	2	2	2
D. Low pressure distribution line	All	3	3	3
E. Irrigation canal more than 4 metres wide	All	10	10	10
F. Buried water pipeline	All	10	10	10

Abandonment of Holes and Cleanup

The regulation states that all holes shall be identified with the number of the permit by means of an approved tag. Before the drilling rig is removed from a hole, a permit tag shall be fixed facing and in close proximity to the hole, but in no case more than 10 m from it.[6] If this isn't possible, the permit number must be clearly marked on the hole plug. In all cases, the location of each hole must be clearly marked. Shot holes must be abandoned immediately after detonation and be properly plugged.

Another concern is that the ground surrounding the hole be restored as close as possible to its original condition. Therefore, the seismic operator is responsible for the clean-up of debris and the spreading of drill cuttings not required to fill the hole.[7]

Compensation

The matter of compensation for entry and access is left entirely to the farmer and the operator. There is no legislation governing the amount or method of payment. It's common practice for seismic operators to offer compensation that is equitable to all who are affected by the geophysical program. If a negotiated amount can't be reached, the landowner/occupant may refuse to allow entry. Generally, most operators agree to pay access fees within 30 to 90 days following completion of the geophysical program. However, payment may be requested prior to or shortly after entry by the operator.

3-D Seismic Surveys - Special Considerations

Many seismic operators are now utilizing the three-dimensional (3-D) process, resulting in significant oil and gas discoveries. The older, two-dimensional (2-D) process uses only one shot line in conjunction with a geophone line. The 3-D method involves laying out a network of separate source lines and receiver lines, usually at right angles to each other.

Depending on the type of target being explored, the 3-D line grid may have a 200 m receiver line spacing and 300 m source line spacing. These intervals may vary. When the operator is recording by this method, numerous geophones are planted at one time. Sometimes it appears that the seismic crew isn't in the vicinity and yet there are numerous geophones and cables across the land. They are being used to record seismic energy despite the crew being some miles away.

Three-dimensional seismic acquisition has special considerations for the landowner that aren't observed with 2-D seismic. More men and equipment are used for 3-D acquisition. Even on the Prairies, some crews incorporate the use of a helicopter to move equipment around. Receiver and source lines are usually kept as straight as possible. However, they may wander slightly to avoid buildings, stands of trees, water, etc. When an seismic operator acquires a permit for 3-D acquisition, he will usually want the ability to move or offset source points from the original permitted line. The discussion of offsetting with the permit agent at the time of permitting is important.

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[6] Alta. Reg. 32/90, s. 39(2).
[7] Alta. Reg. 32/90, s. 35-37.

Since larger areas can be recorded with 3-D equipment, it stays on the ground longer than for 2-D acquisition. When discussing the conditions of approval with the seismic operator's representative (at the time of permitting) it's important to discuss the timing of the acquisition. This is particularly true if there is farming activity planned in the near future.

Access to various parts of a 3-D survey is often difficult and time consuming. If the landowner/occupant doesn't allow access off the permitted lines, the operator is obligated to stay on the source and receiver lines. At times, this is difficult because of the terrain. Detours are sometimes necessary. It's beneficial to the seismic operator if the landowner/occupant allows limited access to move from line to line or to cross fence lines and gates, etc. Both parties should discuss conditions of access at the time of signing to ensure that there are no misunderstanding once operations begin.

Permit Form

The Canadian Association of Geophysical Contractors, in conjunction with the Office of the Farmers' Advocate, the Canadian Association of Petroleum Producers, and the Small Explorers and Producers Association of Canada, have developed a standard permit form entitled, *Permit to Conduct Geophysical Operations* (revised in 1998).

We strongly recommend that this document be used for all seismic operations. A landowner/occupant is under no obligation to use any other form. The landowner/occupant has the right to refuse entry over the matter of compensation or dissatisfaction with the company's permit form. The *Permit to Conduct Geophysical Operations* form affords the landowner/occupant more protection than any agreement currently in use. It was created to protect the landowner/occupant's interest and satisfy the company's needs. However, if changes are required to suit particular agricultural operations, both parties are at liberty to do so. **Negotiation is the key word.**

Damage Release Forms

Damage releases aren't required under government regulations or the law. However, many companies do require, as their own policy, signed release forms before damage payments are made. There are certain items to pay special attention to.

(a) payment should be for a specific damage named, even if it may be general in nature like rutting of a field, crop loss, fence damage, etc.

(b) payment should cover a specific time period — all damages up to and including a certain date

A concern of the geophysical industry is that it does not want to be held responsible for specific losses for an indefinite period of time. Seismic operators want to pay and then be released from that specific damage. On the other hand, landowners/occupants want to be able to receive compensation for unforeseen damage, when such damages can be attributed to the seismic operation. Most of the damages associated with seismic operations, as they pertain to land, occur immediately or within a short period of time. If additional damages become evident after the release form has been signed, the farmer may still be able to pursue them with the company. This becomes more difficult as time passes.

In order to deal with any subsequent damages it's important that the signed release form covers only those damages which are evident at the date of signing. Read and understand what is presented to you. If you're unsure, seek assistance before signing.

Once a damage release form is signed for a specific loss, there can be no future claim for that item. However, this doesn't cover craters and flowing holes that result from shot holes, years later. The seismic operator is still responsible by law for damages unforeseen at the time of signing the release.

As long as the negotiated contract meets the conditions requested and the remuneration offered is satisfactory, it's in everyone's interest to allow exploration on the property.

Additional Points of Interest

The following are specific problems that have arisen in the past. By making you aware, you may avoid them.

- Be sure that the width of seismic line is indicated on the contract. Eight metres is usually adequate.
- Make sure that the contract states that admittance to the line is through a designated point. Otherwise, the seismic operator may enter from any point, which could result in damage to crops, etc.
- Be sure that the line is on a specific area. Otherwise, the right is given to test on the whole quarter section, depending on the case.
- Draw a diagram on the permit form that clearly indicates the route to be taken. Be specific if a diagonal route across the section isn't desired. Indicate that it's to follow fence lines, to avoid shelter belts, etc. If line cutting through trees or brush occurs, determine and stipulate the methods of disposal and clean-up to be employed by the operator.
- Stipulate on the contract the date the operator plans to be on the property and the date by which he must be off. Otherwise, the seismic operator may still be on the property when it comes time to seed or harvest.
- Should the company decide to "set up camp" on the property, have it written into the contract that it's responsible for all additional damages such as diesel spills. Note that all garbage and toilet facilities are to be cleaned up to your satisfaction.
- If water wells are a problem, see that they are properly covered within the terms of the contract.

The references to provincial regulations contained in this publication are often excerpts. In some cases the regulations have been condensed. They should be treated as such. If the specific wording of the regulation is desired, copies are available through the Queen's Printer, 11510 Kingsway Avenue, Edmonton, Alberta, T5G 2Y5 (780) 427-4952 or through the Office of the Farmers' Advocate.

Geophysical Complaint Mediation
Regulatory Enforcement Program (White Area)

The geophysical regulatory enforcement and complaint mediation program is administered by the Alberta Environment.

The regulatory component involves enforcement of the Alberta Exploration Regulations. Crew inspections are conducted in an effort to cite contraventions, report or document violations, and assess the recommended monetary penalty where applicable.

This program also assists landowners/occupants, counties, municipal districts (including special areas and irrigation districts) with geophysical related inquiries and complaints associated with exploration activity. The investigation and mediation of farmer concerns includes the following items: water wells, structural damage, permit disputes, surface damages, trespass (and related damages), flowing or cratered shot holes, crop and livestock damages, and miscellaneous inquires.

Geophysical Inspectors are presently located throughout the White Area (settled area) in Edmonton, Red Deer and Lethbridge. This service can be accessed by contacting Alberta Environment's Land and Forest Service at (780) 427-3932. The information received will be forwarded to an inspector who will respond to the inquiry. An unbiased field investigation may be initiated in an effort to work with both the complainant and the operator to mediate a resolution to the conflict.

For further information or clarification, you may contact the following:

Office of the Farmers' Advocate

Alberta Agriculture, Food and Rural Development
#305, 7000 - 113 St.
Edmonton, AB T6H 5T6
(780) 427-2433 Fax: (780) 427-3913

Geophysical Inspection, Forest Management Division

Alberta Environment
7th Floor, 9920 - 108 Street
Edmonton, AB T5K 2M4
(780) 427-3932

Canadian Association of Geophysical Contractors

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